We Claim:

1. A method for characterizing an illumination source in an exposure apparatus, which comprises:

providing the exposure apparatus with the illumination source, a mask mount, an optical lens system, and a substrate plane;

providing a mask with a first side, on which an opaque layer is disposed, and an opposite second side having a surface, at least two mutually parallel slits separated from one another by a distance being disposed in the opaque layer;

introducing the mask into the mask mount with the first side having the opaque layer facing the illumination source;

illuminating the opaque layer with the illumination source to form an interference pattern of the slits on the surface of the second side of the mask;

imaging the interference pattern formed on the second side of the mask into the substrate plane through the optical lens system; and

recording an image signal from the imaged interference pattern in the substrate plane, the image signal representing a light

distribution of the illumination source for a characterization of the illumination source.

2. The method according to claim 1, which further comprises:

determining a contrast by determining a maximum value and a minimum value of an intensity of the interference pattern from the recorded image signal;

calculating a contrast function from the distance between the slits and the determined contrast; and

determining the light distribution of the illumination source by calculating a Fourier transform from the contrast function.

3. The method according to claim 1, which further comprises carrying out the recording of the image signal by:

exposing a photosensitive resist on a substrate in the substrate plane;

subsequently developing the substrate to remove exposed portions of resist; and

subsequently measuring a height profile of unexposed portions of the resist with a microscope.

4. The method according to claim 1, which further comprises carrying out the recording of the image signal with a sensor moved in the substrate plane.

5. The method according to claim 1, which further comprises providing the illumination source as at least one of a further optical lens system and a mirror system.

6. The method according to claim 1, which further comprises:

determing a wavelength of light emitted by the illumination source;

carrying out the step of providing the mask by selecting at least one of:

a thickness between the opaque layer on the first side and the surface on the second side of the mask; and

a respective width of the mutually parallel slit structures;

to make a quotient of twice the square of the width and the thickness be less than the wavelength.

7. The method according to claim 1, which further comprises:

determining a numerical aperture of a diaphragm of the optical lens system;

carrying out the step of providing a mask by selecting at least one of:

a thickness between the opaque layer on the first side and the surface on the second side of the mask; and

the distance by which the mutually parallel slit structures are separated from one another;

to make a quotient of the distance and the thickness be less than the numerical aperture.

8. A method for characterizing an illumination source in an exposure apparatus, which comprises:

providing a mask with a first side, on which an opaque layer is disposed, and an opposite second side having a surface, and disposing at least two mutually parallel slits separated from one another by a distance in the opaque layer;

introducing the mask into a mask mount of the exposure apparatus with the first side having the opaque layer facing the illumination source;

illuminating the opaque layer with the illumination source to form an interference pattern of the at least two mutually parallel slits on the surface of the second side of the mask;

imaging the interference pattern formed on the second side of the mask into the substrate plane of the exposure apparatus through an optical lens system of the exposure apparatus; and

recording an image signal from the imaged interference pattern in the substrate plane, the image signal representing a light distribution of the illumination source for a characterization of the illumination source.

9. A mask for characterizing an illumination source, comprising:

a transparent carrier material; and

an opaque layer disposed at said transparent carrier material and having:

a first pair of two mutually parallel slits separated from one another by a first distance and disposed in said opaque layer; and

a second pair of mutually parallel slits separated from one another by a second distance and disposed in said opaque layer, said second distance being greater than said first distance.

10. The mask according to claim 9, wherein said opaque layer has a third pair of mutually parallel slits separated from one another by said first distance and disposed in said opaque layer, said slits of said first pair having a longitudinal side with a first orientation in said opaque layer, said slits of said second pair having a longitudinal side with a second orientation in said opaque layer, said first and second orientations forming an angle.

11. The mask according to claim 9, wherein said opaque layer has a third pair of mutually parallel slits separated from one another by said first distance and disposed in said opaque layer, said slits of said first pair having a longitudinal side with a first orientation in said opaque layer, said slits of said second pair having a longitudinal side with a second orientation in said opaque layer at an angle to said first orientation.

12. The mask according to claim 9, wherein:

said opaque layer has a matrix configuration of a multiplicity of pairs of slits formed parallel to one another respectively, said matrix having rows and columns, said slits of said respective pairs:

being separated from one another by a number of different distances; and

having longitudinal sides with a number of different orientations in the opaque layer; and

each pair of said mutually parallel slits:

in a row of said matrix has precisely one value of said number of different distances of said slits; and

in a column of said matrix has precisely one angle of said number of different orientations of said longitudinal sides of said slits.